Environmental
Management System

GUIDANCE MANUAL:

Implementing ISO 14001

U.S. Army

ISO 14001 Environmental Management Systems

The Environmental Management System (EMS) Guidance Manual: Implementing ISO 14001 has been designed to accommodate the requirements of the Department of Defense (DoD) and, specifically, the U.S. Army, in establishing an EMS for your facility that conforms to the ISO 14001 standard. This manual is designed to focus on individual organizations and their specific needs in addressing the requirements of the ISO 14001 specification standard. This manual will provide participants with the direction and tools for examining their origination's capabilities and will assist in laying the foundation for developing process and procedures to meet the requirements of the ISO 14001 specification standard. However, this manual does not guarantee that your organization of a facility within your organization will receive ISO 14001 registration. The Guidance Manual is intended as a guide only and cannot cover every possible situation that facilities will encounter in obtaining ISO 14001 registration.

Examples of documents for a fictitious organization are used as models throughout the manual. Forms and templates are provided from which users can complete information about their organization and use these drafts in compiling data and procedural requirements for the organization's EMS.

The objectives of this manual are to provide the users with:

- an understanding of the importance of proper documentation
- the knowledge to begin implementation of an effective EMS
- a clear distinction between environmental compliance and ISO 14001 conformance
- and understanding of the five phases of an EMS and the required procedures associated with those phases.

EMS Standards

There are two types of standards published by the International Organization for Standardization:

1) Guidance Standards (suggested)
2) Specification Standards (required)

Throughout this manual, we will focus on the ISO 14001 standards, the only auditable (specification) standard in the series. Other standards are reference as suggestions for meeting the requirements of 14001.

Course topics

Throughout this manual, we will review in detail each of the 17 elements of ISO 14001.

ISO 14001 Reference Index

ISO 14001 Standard	Title/Description	Guidance Manual Section	Form #
4.2	Environmental Policy	1.0	1, 2, 3
4.3.1	Environmental Aspects	2.0 & 4.0	4, 5, 6, 7 & 10, 11
4.3.2	Legal and Other Requirements	3.0	8, 9
4.3.3	Objectives and Targets	5.0	12, 13, 14
4.3.4	Environmental Management Program(s)	6.0	15, 16
4.4.1	Structure and Responsibility	8.0	21, 22, 23
4.4.2	Training, Awareness, and Competence	9.0	24, 25
4.4.3	Communication	10.0	26, 27, 28
4.4.4	Environmental Management System Documentation	11.0	29
4.4.5	Document Control	12.0	30
4.4.6	Operational Control	13.0	31, 32, 33
4.4.7	Emergency Preparedness and Response	14.0	34
4.5.1	Monitoring and Measurement	7.0	17, 18, 19, 20
4.5.2	Nonconformance and Corrective and Preventative Action	15.0	35
4.5.3	Records	16.0	36
4.5.4	Environmental Management System Audit	17.0	37
4.6	Management Review	18.0	38

Instructions For Completing An Environmental Management System Under ISO 14001

In this part of the Guidance Manual, you will find step-by-step guidance to develop, document, and implement an environmental management system (EMS) for your facility that conforms to the ISO 14001 standard. The process of developing, implementing, and maintaining an EMS based on ISO 14001 consists of the following five phases:

I. Environmental Policy
II. Planning
III. Implementation and Operation
IV. Checking and Corrective Action
V. Management Review

The five phases are comprised of seventeen core elements as illustrated in Figure 1. The information in the following sections outlines the seventeen elements of an EMS and provides step-by-step instructions for preparing such a system. It is important to keep in mind that your EMS will operate as a continuous cycle and will evolve over time.

This Guidance Manual modifies the sequential order of the seventeen elements that make up ISO 14001. The modified order offers a more logical guide to completing the tasks. The second element in ISO 14001 Section 4.3.1, *Environmental Aspects*, is broken down into two elements in this Manual, Sections 2.0 and 4.0, respectively. The thirteenth element, Section 4.5.1, *Monitoring and Measurement*, is found in Section 7.0 in this Guidance Manual.

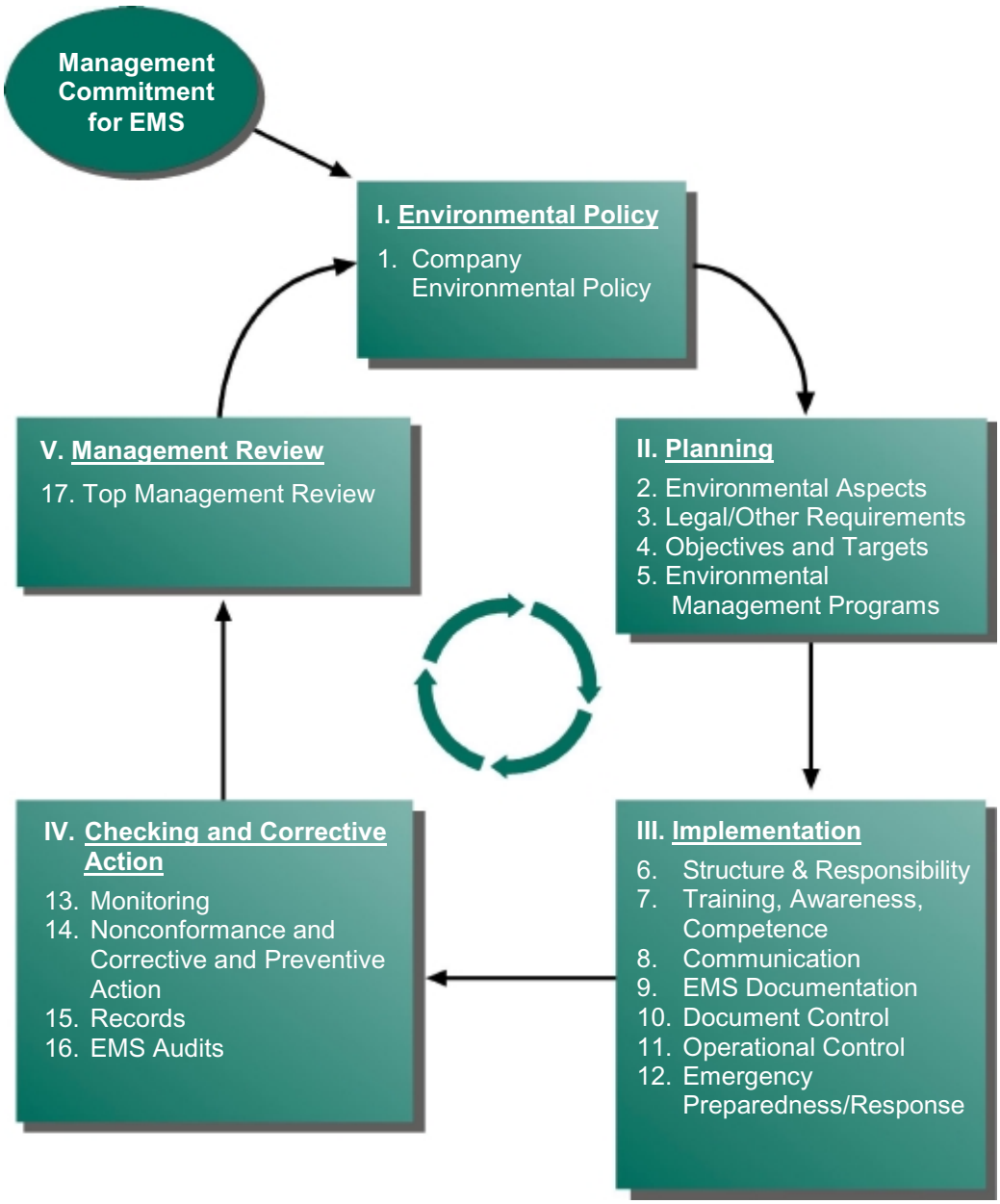
The EMS forms in Part 2 of this Manual, when completed, will provide the essential components, or the foundation, of an EMS that conforms to the main requirements under ISO 14001 specification standard. However, this Manual does not guarantee that your organization or a facility within your organization will receive ISO 14001 registration. This Manual is intended as a guide only and cannot cover every possible situation that facilities will encounter in obtaining ISO 14001 registration.

Part 3 provides an example of a documented EMS for an Army activity (i.e. motor pool). It includes examples of completed forms you may use for reference when completing your EMS. The example in Part 3 should not be construed as a standard but merely as an illustration.

Administrative Details

Before beginning the first phase, photocopy all the forms in Part 2. While this publication is copyrighted, the forms may be copied for your use. Complete the photocopied forms in writing as you proceed through the general instructions for developing your EMS. After completing the draft handwritten version of the EMS, you can then type the final EMS on the original forms.

Figure 1. Environmental Management System Model for ISO 14001 Standard



1.0 Environmental Policy

To develop a successful and effective EMS, five key tasks that must be undertaken by management:

Environmental Policy
Key Tasks

- **Select an EMS Coordinator**
- **Perform a gap analysis**
- **Prepare a budget, and obtain the appropriate resources**
- **Select an EMS Team**
- **Develop an environmental policy**

These actions are essential in constructing a firm foundation for an effective EMS.

1.1 EMS Coordinator

The selection of an EMS Coordinator is crucial to the success of your EMS. This person will be responsible for developing and implementing the environmental policy and the EMS. Great care must be taken to ensure that the person chosen is well qualified to handle the responsibilities associated with the EMS.

Not all small or medium-sized organizations have the luxury of choosing among multiple candidates, but your choice of who will be the "champion" of the EMS is critical. The EMS Coordinator should have the necessary authority, an understanding of the organization, and project management skills.

Designating an individual as an EMS Coordinator meets two objectives. First, by naming an EMS Coordinator, one person is clearly identified as being responsible for the day-to-day operations of the EMS. Those responsibilities should be reflected in that person's job description. Second, naming an EMS Coordinator provides a direct contact with whom top management, employees, regulatory agencies and the ISO 14001 registrar can discuss any aspects of the company's EMS.

In addition, ISO 14001 Section 4.4.1*, Structure And Responsibility,* requires top management to appoint a specific management representative. The EMS Management Representative may or may not be the EMS Coordinator. Irrespective of other responsibilities, the EMS Management Representative must have the authority and responsibility to:

1. Ensure the EMS is established, implemented, and maintained in accordance with ISO 14001
2. Report the performance of the EMS to top management for review and possible modification.

Within small organizations, one person is likely to fulfill both the EMS Coordinator and the EMS Management Representative positions. A large organization, however, would likely assign one person to each position. The EMS Coordinator, in this case, would handle the day-to-day operations of the EMS, while the EMS Management Representative would oversee the EMS and the EMS Coordinator's efforts.

To effectively implement or enhance an EMS, your organization's EMS Coordinator must have the authority to implement and manage the system. However, the ultimate responsibility for the EMS remains with top management.

1.2 Gap Analysis

Your organization may already have in place an environmental management system or parts of a system. If this is the case, you will want to determine how closely your system conforms to ISO 14001. A gap analysis determines the differences, or gaps, between one system and another. Not only will this analysis identify the gaps, but it also should determine the size of the gaps. These findings will lead to recommendations, project plans, and the identification of necessary resources for filling the gaps.

1.3 Budget and Resources

After conducting a gap analysis, the EMS Coordinator will develop a budget that covers the necessary resources to complete an EMS that conforms with ISO 14001. For some organizations, this may mean establishing a budget for the entire process; other organizations may only need to update certain portions of their existing management system.

ISO 14001 Section 4.4.1 requires top management to provide the essential resources to implement, control, and manage the EMS. According to ISO 14001,

"resources include human resources and specialized skills, technology and financial resources."

The EMS Coordinator will then submit the budget to top management and obtain its commitment to provide the necessary resources. To reinforce this commitment, the organization's budget will reflect these resource allowances. In some cases, top management may want to provide the EMS Coordinator with an exclusive budget to develop and implement the EMS.

1.4 EMS Team

Top management and the EMS Coordinator may consider creating an EMS Team to assist in developing and implementing the system. This decision should be based on the size of the organization or facility that will be implementing the EMS.

This team should consist of key individuals from various divisions, departments, and operating work areas within the organization who are familiar with the facility, the various processes, and its environmental requirements. Diversity among team members will bring together a pool of expertise and ideas from which to develop and implement the EMS.

For certain activities, consulting organizations may provide expertise and guidance, which can be useful in the implementation of the EMS. However, internal staff should be involved throughout the process because they will need to operate the EMS on a daily basis.

After the EMS Coordinator and EMS Team members have been selected, complete Form 2, **EMS TEAM MEMBER ROSTER**. The information necessary to complete Form 2 is the name, job title, and assigned responsibility of each person involved in preparing the EMS. Later in this manual, you will be asked to designate the responsibilities for *maintaining* the EMS.

1.4.1 Meetings

After the EMS Coordinator and EMS Team members have been selected, an initial orientation meeting should be held. At the meeting, everyone involved should be informed of the organization's planned EMS as well as team members' new responsibilities.

The initial orientation meeting will get the program off to a good start, but many more meetings will be necessary. While the primary activities taking place during the early meetings will involve system development and implementation, the EMS Coordinator may also wish to use this time to provide team members with some training.

The EMS Team should meet on a regular basis to resolve problems and discuss the progress of the EMS. Meeting minutes should be documented as they may prove helpful when working with ISO 14001 auditors. In some cases, auditors' questions may be answered with the documented meeting notes.

1.5 Environmental Policy

Environmental Policy

- **The policy provides environmental direction**
- **The policy provides the framework for setting objectives and targets**
- **The policy requires commitment targets**

The environmental policy is an essential part of an organization's EMS. The environmental policy must establish the overall direction of the organization in terms of its commitment to environmental responsibility. A policy should also set the foundation and framework for meeting the environmental objectives and targets for the organization.

The ISO 14001 standard establishes certain requirements that an organization's environmental policy must meet. If your organization already has an environmental policy, review this section to ensure it meets the ISO 14001 requirements.

The first requirement is that top management must establish and define the environmental policy. Note that ISO 14001 does not specifically state that top management must *write* the policy, only that it be committed to the policy and ensure its implementation.

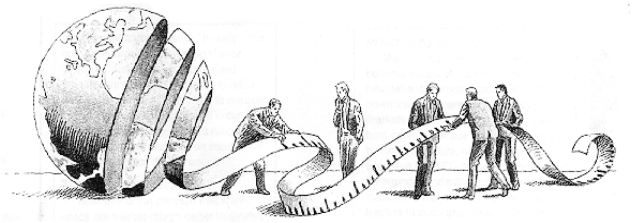
ISO 14001 Section 4.2 lists additional requirements that the policy must meet. Top management must ensure the policy:

a. "is appropriate to the nature, scale and environmental impacts of its activities, products or services
b. includes a commitment to continual improvement and prevention of pollution
c. includes a commitment to comply with relevant environmental legislation and regulations, and with other requirements to which the organization subscribes
d. provides the framework for setting and reviewing environmental objectives and targets
e. is documented, implemented and maintained and communicated to all employees
f. is available to the public."

In addition to the ISO 14001 requirements, the policy should focus on the organization's mission, vision, and core values. Specific local or regional conditions should be considered as should the organization's image and the views of other interested parties. Other interested parties may include employees, share holders, customers, consumers, local communities, environmental groups, lenders, and regulators.

The following paragraphs describe each of the six requirements in more detail to assist you in the preparation or review of your policy.

1.5.1 Nature, Scale, and Environmental Impacts



Your organization's environmental policy must be appropriate to the nature, scale and environmental impacts of its activities, products or services. Should your organization already have an environmental policy in place, you may need to revise or add to the policy in order to ensure it addresses these issues specifically.

Often, one organization is comprised of several facilities that vary in nature, scale, and/or environmental impact. If this is characteristic of your organization, you may find that the current policy is broad to cover all of these facilities. It may be necessary to develop a separate environmental policy for each facility that is relevant to that facility's activities, products, and services and that still conforms to the overall corporate policy.

In addition, the environmental policy must address the environmental impacts of activities, products, and/or services. Should your organization, for example, produce large volumes of waste or consume large amounts of water, the policy should address these issues.

1.5.2 Continual Improvement and Prevention of Pollution

In order to comply with ISO 14001, your environmental policy must state your commitment to "continual improvement" and "prevention of pollution." ISO 14001 defines "continual improvement" as the

"process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization's environmental policy."

Your commitment is for the continual improvement of the EMS, which should yield better environmental performance. Note, however, that the standard does not require continual improvement of *environmental performance*. The standard further clarifies that continual improvement need not take place in all areas of the EMS simultaneously.

The ISO 14001 definition of "prevention of pollution" includes more ways in which to eliminate pollution than does the U.S. EPA's definition. While the EPA defines "pollution prevention" as "eliminating or reducing pollution at the source," ISO 14001 defines "prevention of pollution" as the:

"use of processes, practices, materials or products that avoid, reduce or control pollution, which may include recycling, treatment, process changes, control mechanisms, efficient use of resources and material substitution."

Your organization must consider various methods to prevent pollution under the ISO 14001 definition. However, if the options are not practical, too expensive, or not viable, your organization is not required to implement them. In any case, you may need to demonstrate to the ISO 14001 auditors that various pollution prevention methods were considered and evaluated.

1.5.3 Environmental Legislation, Regulations, and Other Requirements

ISO 14001 requires organizations to state in their environmental policies "a commitment to comply with environmental legislation and regulations and with other requirements to which the company subscribes." "Other requirements" may include:

- Standard industry practices and consensus standards:
  - ANSI
  - ASTM
  - ASME
  - ACGIH
  - NIOSH
  - MILSPECs
- Voluntary codes of conduct:
  - chemical industry's Responsible Careâ program
  - petroleum industry's Strategies for Today's Environmental Partnership (STEP)
- Voluntary environmental performance agreements with government agencies:
  - US EPA's Project XL
  - US EPA's Energy Star Program
  - US EPA's Green Lights Program
- Environmental guiding principles:
  - Business Charter for Sustainable Development prepared by International Chamber of Commerce (ICC)
  - The Rio Declaration on Environment and Development guiding principles established by the United Nations
  - National Environmental Policy Act of 1969 established by United States.

ISO 14001 does not require that organizations subscribe to other requirements. However, if the organization subscribes to other requirements, ISO 14001 expects the organization's commitments to be sincere.

An organization is not required to be in compliance with all environmental laws and regulations and other requirements to be registered under ISO 14001. However, an organization must have a plan in place or provide evidence that it is working to achieve compliance.

1.5.3.1 Use of "Commitment" and "Commit"

Some organizations are reluctant to use the words "commitment" and "commit" in fear of potential legal or other ramifications. In order to avoid these terms, an organization may state in its company policy that "... we will strive to comply with environmental legislation and regulations." According to some ISO 14000 registrars, this type of statement will create concern regarding the organization's intent, and the registrar may not register the organization.

1.5.3.2 Voluntary Commitments

In addition to the ISO 14001 required commitments, your environmental policy may include voluntary commitments, examples of which follow:

- Develop environmental performance evaluation procedures
- Design products to minimize their environmental impacts in production, use and disposal
- Eliminate or reduce pollution at the source
- Consume less resources such as materials, fuel, and energy
- Emphasize recovery and recycling over disposal
- Use materials containing recycled products
- Establish life cycle analysis
- Promote education and training
- Share and communicate environmental experiences with interested parties
- Work towards sustainable development
- Encourage the use of EMS to suppliers, contractors, and customers.

If your organization makes any additional commitments, it must meet, or show a plan to meet, any such commitment.

1.5.4 Framework for Objectives and Targets

ISO 14001 requires that the policy "...provides a framework for setting and reviewing environmental objectives and targets." Objectives represent an organization's long-term goals, while targets are steps that lead to accomplishing the main objectives. The exact words used to meet this requirement will vary from one organization to another. As you write or review your policy, ask the question, "Does the policy meet this requirement?"

1.5.5 Documentation and Employee Awareness of Policy

To reiterate, the environmental policy must be documented, implemented, maintained, and reviewed periodically.

In addition, the policy must be communicated to all employees. Employees should have a general awareness of the policy and should understand the portions of the environmental policy that may pertain to their work efforts.

1.5.6 Public Availability of Policy

ISO 14001 requires that your environmental policy be available to the public on an as-requested basis. Some organizations include the environmental policy in their annual reports. Advertising the organization's environmental policy in local or regional newspapers is another way of making it available to the public. Many organizations post their policy on their internet web page.

1.6 Developing Your Environmental Policy

The environmental policy statement is one of the most important parts of implementing an effective EMS program. If your organization has an environmental policy, review it to determine if the policy meets all the ISO 14001 requirements. In some cases, the policy may be too broad and may need to be re-defined. In reviewing or developing you policy, make sure it states your organization's commitment to the following:

1. Continual improvement
2. Prevention of pollution
3. Compliance with relevant environmental regulations and other requirements.

Use Form 3, **ENVIRONMENTAL POLICY**, in Part 2 to write your policy. You may want to refer to Example 3 in Part 3. After completing your environmental policy, top management must indicate its commitment by signing the document.

The environmental policy is a key element in establishing your organization's environmental objectives and targets. As you work through the next phase, Planning, certain environmental objectives and targets may be established that do not coincide with your organization's policy. If this should happen, you will need to revise your environmental policy at the end of the Planning Phase.

Summary Checklist

ENVIRONMENTAL POLICY

Step 1: Complete the basic cover sheet for your written EMS on **Form 1, ENVIRONMENTAL MANAGEMENT SYSTEM**. You may wish to refer to Example 1 in Part 3.

Step 2: Identify the EMS Coordinator, the person who will be responsible for overseeing your organization's Environmental Management System.

Step 3: Identify EMS Team members, and complete **Form 2, EMS TEAM MEMBER ROSTER**. List the EMS Team members by name, job titles, and EMS responsibilities. See Example 2 in Part 3.

Step 5: Conduct the orientation meeting.

Step 6: Complete **Form 3, ENVIRONMENTAL POLICY**, and have it signed by top management. See Example 3 in Part 3.

2.0 Environmental Aspects And Impacts

Planning Elements

- **Environmental aspects and impacts**
- **Legal and other requirements**
- **Significant impacts**
- **Environmental objectives and targets**
- **Environmental programs**
- **Monitoring and measurement**

ISO 14001 Section 4.3.1, *Environmental Aspects,* requires organizations to establish and maintain a procedure to:

"...identify the environmental aspects of its activities, products or services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment."

The term "environmental aspects" is defined in the standard as

"…any element of an organization's activities, products or services which can interact with the environment."

In laymen's terms, environmental aspects cause, or have the potential to cause, an environment impact.

Examples of environmental aspects include:

- point source air emissions
- fugitive air emissions
- automobile, mobile equipment, or truck exhaust emissions
- waste water discharge
- storm water discharge
- potential for accidental spill
- waste generation
- disposal of waste
- use of water
- use of energy
- use of natural resources
- use of recycled materials
- noise.

An environmental impact is defined as

"…any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services."

Examples of environmental impacts include:

- increased air pollution
- contamination of a water body or soil
- conservation of natural resources
- depletion of natural resources.

A cause-and-effect relationship exists between environmental aspects and environmental impacts, respectively. For instance, an environmental aspect, *or cause*, can be the point source emissions of volatile organic compounds (VOCs). The environmental impact, *or effect,* is ozone depletion.

To comply with ISO 14001 Section 4.3.1, the following five actions should be taken:

Step 1. Identify all of your organization's activities, products, and services;
Step 2. Identify the environmental aspects of your organization's activities, products, and services that can be controlled or influenced;
Step 3. Identify the environmental impact(s) of each aspect;
Step 4. Establish and maintain a procedure or method to identify any new or modified environment aspect or impact;
Step 5. Identify the most significant environmental impacts.

The following sub-sections provide specific details for each of the first four steps. The fifth step, identifying "significant impacts," is described in Section 4.0. It will be easier to identify significant impacts if you first complete Section 3 regarding legal and other requirements. The information in Section 3, *Legal and Other Requirements*, may be used to identify significant impacts in Section 4, *Significant Impacts*.

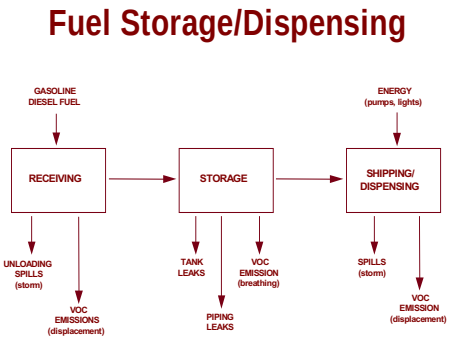
Identification of environmental aspects will form the foundation of your EMS. The aspects that have significant impacts on the environment will become the basis for setting objectives and targets; therefore, you will want to be thorough in completing this step.

2.1 Activities, Products, and Services

The first step in this process is to list all of your organization's main activities, products, and services on Form 4, **COMPANY ACTIVITIES, PRODUCTS, AND SERVICES.**

Developing a list of the organization's activities, products, and services can be a difficult task. The activity, product, or service should be small enough to be understood, but large enough to be analyzed.

You may want to consider breaking down your organization's operations into a series of processes. For instance, operations at a motor pool might be broken down into the following processes:



2.2 Environmental Aspects

The next step is to identify the environmental aspects for each activity, product, and service. Complete **Form 5, CHECKLIST FOR ENVIRONMENTAL ASPECTS**, for every aspect identified. (You will need to make multiple copies of this form to complete this step.) This form is not required under ISO 14001; however, it can be useful in future steps, for example, demonstrating to auditors your criteria for determining significant impacts.

For each environmental aspect that is marked "YES," you should list any quantitative information that is applicable. For instance, if an activity emits air pollutants, state the amount (i.e., 543 tons of VOCs per year, or 3.5 pounds of particulate matter per hour). Following is a list of additional information to include, if applicable:

- legal and other requirements
- permits
- record keeping requirements
- pollution controls or treatment
- best management practices
- monitoring requirements.

The information necessary to complete Form 5 will also be helpful in determining the legal and other requirements and significant impacts in later sections.

On **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**, list one activity, product, or service, and then identify and list the environmental aspects for that activity, product, or service. You should refer to Form 5 for this information. Repeat this step for each activity, product, or service. (You will need to make multiple copies of this form to complete this step.)

Some activities, products, and/or services may have several environmental aspects, as shown in Example 6 in Part 3. In fact, most organizations will have an extensive list of environmental aspects at the end of this step. If an activity, product, or service does not have an environmental aspect, do not list it on Form 6.

2.3 Environmental Impacts

The next step is to identify the environmental impact for each environmental aspect. On **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**, list the environmental impact for each environmental aspect. As you complete this step, remember the cause-and-effect relationship discussed earlier.

Please note that environmental impacts can be positive or negative. Examples of negative impacts include increased air pollution, potential contamination of the ground, or depletion of natural resources. Positive impacts can include conservation of natural resources, improved wetlands area, decreased soil erosion, and conservation of natural habitat.

2.4 Procedure for Environmental Aspects and Impacts

To meet the ISO 14001 standard, an organization must establish and maintain a procedure to continually identify environmental aspects and evaluate the impacts. This procedure must take into account both old and new activities, products, and services. For old elements, changes in legal requirements, environmental issues, or business issues may require that the environmental aspect and impact be re-evaluated. In addition, this procedure must enable the EMS Coordinator to recognize a new activity, product, or service and evaluate its impact.

For example, the procedure for maintaining aspects and impacts may require that the EMS Coordinator review the organization's environmental aspects and impacts every six months. The EMS Coordinator may also want to require certain department managers, such as production manager(s), to report any new or modified activities, products, or services to maintain the list of environmental aspects and impacts.

On **Form 7, PROCEDURE FOR ENVIRONMENTAL ASPECTS AND IMPACTS**, provide a narrative description of how your organization plans to identify environmental aspects and corresponding impacts of current and future activities, products, and services. You may wish to refer to Example 7 in Part 3.

Summary Checklist

ENVIRONMENTAL ASPECTS AND IMPACTS

Step 1: Identify all the company's activities, products, and services on **Form 4, COMPANY ACTIVITIES, PRODUCTS, AND SERVICES**.

Step 2: Complete **Form 5, CHECKLIST FOR ENVIRONMENTAL ASPECTS.**

Step 3: On **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**, list only one activity, product, or service, and then identify and list the environmental aspects for that activity, product, or service. Repeat this step until the aspects have been identified for each activity, product, and/or service. Remember to refer to Form 5 to assist in identifying the environmental aspects.

Step 4: Identify the environmental impacts for each aspect on **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**.

Step 5: On **Form 7, PROCEDURE FOR ENVIRONMENTAL ASPECTS AND IMPACTS**, define the company's procedure to identify and update the list of environmental aspects and impacts.

3.0 Legal And Other Requirements

ISO 14001 Section 4.3.2, *Legal and Other Requirements,* states that organizations must:

"...establish and maintain a procedure to identify and have access to legal and other requirements to which the organization subscribes directly applicable to the environ-mental aspects of its activities, products, and services."

Before addressing the specific requirements in Section 4.3.2, the term "legal and other requirements" should be clarified:

1. "Legal requirements" include all federal, state, and local legislative and regulatory requirements that are environmentally related or applicable to your operations and includes all Army Policy and Regulations. This definition also includes administrative requirements, such as permits, records, reporting, and environmental plans.

2. "Other requirements" encompass voluntary requirements that the organization commits to meeting. Other requirements may include:
   a. industry codes of practice (e.g., ANSI standards, ASTM standards, chemical industry's Responsible Care® program, petroleum industry's Strategies for Today's Environmental Partnership (STEP) program, etc.)
   b. agreements with public authorities (e.g., consent decrees, U.S. EPA's Green Lights program, Project XL, the Environmental Leadership Program, etc.)
   c. internal company requirements (e.g., ISO 9000 requirements, supplier and customer specifications, etc.)
   d. environmental management principles (e.g., the International Chamber of Commerce's (ICC) Business Charter for Sustainable Development, the United Nation's Rio Declaration on Environment and Development Guiding Principles, etc.)

ISO 14001 registration does not require organizations to volunteer for "other requirements." However, if an organization previously volunteered or subscribed to "other requirements," it must meet the stipulations for that "other requirement" or other program. This is also true for other requirements that an organization plans to volunteer for or subscribe to in the future.

To comply with ISO 14001 Section 4.3.2, the following three actions should be taken:

1. Identify the legal requirements applicable to your organization, and identify other requirements that your organization subscribed to or volunteered to meet;
2. Provide access to legal and other requirements for employees who may need this information;
3. Establish a procedure to identify legal and other requirements directly applicable to the environmental aspects of your organization or applicable facility.

Your organization should determine the best sequence in which to complete these three actions. Some organizations find trial and error is minimized by first identifying the legal and other requirements, and then establishing the procedure. Others, particularly larger organizations with various operations and/or departments, may find it easier to establish the procedure to assist in identifying the legal and other requirements.

3.1 Identifying and Tracking Legal and Other Requirements

In reviewing the applicable legal and other requirements, some of the major federal laws and regulations, including Army regulations, that you should consider are listed in Figure 2. The information provided in Figure 2 is not intended to cover all the laws or regulations that may apply to the many aspects of an industrial operation, but it will give you a starting point for that analysis.

You may want to use some of the sources listed below to identify current environmental laws and regulations that may apply to your organization, or to track any future changes in legal requirements:

- Federal, state, and local government agencies
- Industrial trade associations, societies, or other related groups
- Commercial databases
- Professional services, including environmental consultants and law firms
- Publications that pertain to self-compliance audits and/or environmentally related checklists.

Another method to identify applicable legal requirements is to hire independent auditors to conduct an environmental audit. However, environmental audits may have certain legal ramifications and legal counsel is advised before conducting an environmental audit. The Army Environmental Compliance Audit Scheme (ECAS) can provide a starting point.

List the legal and other requirements with the applicable aspects on **Form 8, LEGAL AND OTHER REQUIREMENTS**.

Figure 2: Major Federal Laws and Regulations

Federal Laws and Regulations	General Description of Applicable Criteria
Clean Air Act (40 CFR Parts 50-99)	• emits any air emissions from operations including stack or fugitive emissions, equipment, or any stored chemicals or fuel
Clean Water Act (40 CFR Parts 100-145, 220-232, 410-471)	• discharges any type of water from operations including storm water, wastewater, and sewage • stores any types of chemicals, hazardous materials or wastes, or energy resources (e.g., coal, petroleum fuels, etc.)
Resource Conservation & Recovery Act (RCRA) (40 CFR Parts 240-299)	• generates, stores, handles, transports, or disposes of hazardous wastes • stores certain regulated substances in underground storage tanks
Spill Prevention Control and Countermeasures (SPCC) (40 CFR Parts 112-114)	• stores, handles, or transports oil of any kind, including petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes, other than dredge spoils
Toxic Substances Control Act (TSCA) (40 CFR Parts 700-799)	• manufactures, processes, distributes, uses, or disposes of TSCA-regulated chemicals
Comprehensive Environmental Response, Compensation & Liability Act (CERCLA, also known as “Super-fund”) (40 CFR Parts 300-311)	• releases a hazardous substance and needs to report such releases under CERCLA • responsible for clean up of contaminated sites
Emergency Planning and Community Right-To-Know Act (EPCRA, also known as SARA Title III) (40 CFR Parts 350-374)	• processes, uses, or stores any of the substances on the U.S. EPA’s list of toxic chemicals or extremely hazardous substances
Hazardous Materials Transportation Act (HMTA) (49 CFR Parts 100-180)	• processes, uses, or stores any of the substances on the U.S. EPA’s list of toxic chemicals or extremely hazardous substances

To keep track of changing legal requirements, your organization may require that your EMS Coordinator or another appointed person review the *Federal Register* and/or a state register on a daily basis. The *Federal Register*, available to the public in printed or electronic formats, lists all new or modified federal regulations, executive orders, and notices issued by the U.S. government. However, reviewing the *Federal Register* on a daily basis can be a tedious and time-consuming task. These regulations are not easily interpreted. An option is to obtain the commercial services of a company that monitors environmental legal requirements.

3.2 Access to Legal and Other Requirements

ISO Section 4.3.2 requires that employees "have access" to all applicable legal and other requirements. This requirement has been interpreted to mean that organizations do not need to maintain all legal and other requirements on-site or at every facility, as long as employees have some sort of access to the applicable requirements (e.g., electronic access).

For instance, if the Spill Prevention Control and Countermeasures (SPCC) regulations apply to your facility, employees should have access to a copy of Title 40 of the Code of Federal Regulations (CFR) Part 112. It may be included in your SPCC Plan, in your EMS, or available through electronic access. Similarly, if your organization signs up to participate in the U.S. EPA's Green Lights Program, a copy of the program should be kept on file or included in your EMS.

On **Form 8, LEGAL AND OTHER REQUIREMENTS**, provide locations for all appropriate information pertaining to legal and other requirements.

3.3 Procedure to Identify Legal Requirements

ISO 14001 Section 4.3.2 requires that organizations establish and maintain a procedure that identifies the legal and other requirements applicable to the environmental aspects of the organization's activities, products, and services. Most organizations are already aware of the environmental laws and regulations that apply to them. However, under ISO 14001, an organization must have a procedure in place to ensure the identification of all legal and other requirements, as well as any new requirements or changes to existing requirements.

To maintain Form 8, you will review your organization's activities, products, and services to ensure all applicable requirements are identified. As you conduct the review, the following issues should be considered:

- raw materials
- use of regulated chemicals and hazardous substances
- material safety and data sheets (MSDS)
- air emissions from processes and materials
- wastewater and storm water discharges
- solid and hazardous waste materials
- packaging of products
- transportation of products.

On **Form 9, PROCEDURE FOR TRACKING LEGAL AND OTHER REQUIREMENTS**, provide a narrative description of how your organization plans to track and keep up to date on the new and changing environmental laws and regulations. This description should include how the legal and other requirements will be communicated to employees.

Summary Checklist

LEGAL AND OTHER REQUIREMENTS

Step 1: Identify and list your legal and other requirements with the corresponding aspects as they pertain to your organization's activities, products, or services on **Form 8, LEGAL AND OTHER REQUIREMENTS**.

Step 2: On Form 8, list the location of all the applicable legal and other requirements.

Step 3: On **Form 9, PROCEDURE FOR TRACKING LEGAL AND OTHER REQUIREMENTS**, describe the procedure to track and keep up to date on changing environmental laws and regulations.

4.0 Significant Impacts

ISO 14001 Section 4.3.1, *Environmental Aspects*, requires that organizations identify environmental aspects

"...in order to determine those which have or can have significant impacts on the environment."

The significant impacts, as they relate to significant aspects, will provide the impetus for establishing your environmental objectives. A significant aspect is defined as an

"…aspect that has or can have a significant environmental impact."

ISO 14001 and 14004 do not provide a standard or method with which to determine the significant impacts. Part of the reason for not establishing a standard or method is that the significance of each impact can vary for each organization based on various factors and concerns. The ISO 14004 standard lists several environmental and business related factors and concerns to consider in evaluating the significance of each environmental impact:

- Environmental Concerns:
  - the scale of the impact
  - the severity of an impact or a potential impact
  - probability of occurrence
  - duration of impact
  - frequency of an impact or a potential impact
  - location of facility (e.g., sensitive environmental areas, classification under the Clean Air Act, etc.)
  - scope of impact based on local, regional, or global basis

- Business Concerns:
  - potential regulatory and legal exposure
  - difficulty of changing the impact
  - cost of changing the impact
  - effect of change on other activities and processes
  - concerns of interested parties
  - effect on the public image of the organization
  - return on investment of the cost to change the impact.

The significance of each impact can vary for each organization based on the listed concerns. For instance, storm water runoff for a facility located in a desert will probably not be considered significant. However, the storm water runoff for a similar facility that discharges into a sensitive estuary (e.g., Chesapeake Bay) will be significant.

The information collected on **Form 5, CHECKLIST FOR ENVIRONMENTAL ASPECTS**, **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS, and Form 8, LEGAL AND OTHER REQUIREMENTS**, should be helpful in determining the significance of some of the listed impacts.

4.1 Determining Significant Impacts

Organizations have the flexibility to establish a system to determine the significance of environmental impacts. Even though ISO 14001 does not require any specific approach, many organizations use a risk matrix format and establish numeric criteria, or a numeric rating system, based on various concerns that they feel are relevant.

Some organizations may establish a definition for "significant impacts." For instance, an SGS-Thomson Microelectronics, Inc., facility located in San Diego, California, defines "significant impacts" as impacts that have:

- continuous releases that are above legal limits or the company's standards
- accidental releases with the potential for very serious impacts
- continuous releases that are within five percent of the legal limits or the company's standards
- continuous releases that cause concern to the community surrounding the facility (based on public complaints to the facility or regulatory agencies)
- continuous waste water releases untreated or abated.

Some organizations consider every regulated aspect and impact as a significant impact. This reinforces their policy commitment to comply with environmental legislation and regulations. Others take the approach that aspects and impacts that exceed the environmental legislation and regulations are significant impacts.

The method developed by you and your EMS team must be a systemic approach that can be used again and again. On **Form 10, CHECKLIST FOR SIGNIFICANT IMPACTS**, provide a description, checklist, definitions, and/or risk matrix to determine the impacts that are significant. You may refer to Example 10 in Part 3. After determining the significant impacts, return to **Form 6, ENVIRONMENT ASPECTS AND IMPACTS**, and indicate whether or not the impacts listed have been determined significant.

4.2 Procedure for Significant Impacts

To meet the ISO 14001 requirement, each organization must establish and maintain a procedure for the continual evaluation of significant impacts. This procedure must take into account both old and new activities, products, and services. For instance, changes in legal requirements, environmental issues, or business issues may require that the environmental aspect and impact be re-evaluated. The procedure must also enable the organization to recognize a new activity, product, and/or service and to evaluate its impact.

One way of maintaining this procedure is to have the EMS Coordinator review the environmental aspects and impacts every six months. The EMS Coordinator may, in turn, require certain department managers, such as production managers, to report any modified or new activities, products, or services.

On **Form 11, PROCEDURE FOR SIGNIFICANT IMPACTS**, provide a written procedure on how your organization will identify its significant impacts. You may refer to Example 11 in Part 3.

Summary Checklist

SIGNIFICANT IMPACTS

Step 1: Provide a narrative description, checklist, definitions, and/or risk matrix that helps to determine the impacts that are significant on **Form 10, CHECKLIST FOR SIGNIFICANT IMPACTS**.

Step 2: On **Form 6, ENVIRONMENT ASPECTS AND IMPACTS**, indicate whether or not the impacts have been deter-mined significant.

Step 3: On **Form 11, PROCEDURE FOR SIGNIFICANT IMPACTS**, provide a written procedure describing how the organization will maintain the list and the evaluation process for significant impacts.

5.0 Objectives And Targets

ISO 14001, Section 4.3.3, *Objectives and Targets*, requires that organizations

"...establish and maintain documented environmental objectives and targets, at each relevant function and level within the organization."

The objectives and targets establish an important link between the environmental policy and the environmental management programs. ISO 14001 states that the objectives and targets must be consistent with the environmental policy, including the commitment to prevention of pollution and continual improvement.

As you work through the following sub-sections, you will need to decide who will establish the objectives and targets. Depending on the size, management structure, and other factors pertaining to your organization, the environmental objectives may be established and reviewed by various personnel and, possibly, with direct top management input.

5.1 Environmental Objectives

An environmental objective is defined as an

"…overall environmental goal, arising from the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable."

In essence, environmental objectives are long-term environmental goals that a company sets to achieve at various levels and functions within the organization. The objectives should reflect the principles established in the environmental policy. Before setting the objectives, review your environmental policy.

In order to comply with ISO 14001 Section 4.3.3, an organization must consider the following factors when establishing and reviewing its objectives:

1. legal and other requirements
2. significant aspects (aspects directly related to significant impacts)
3. technological options
4. financial, operational and business requirements
5. views of interested parties.

The objectives and targets must be established to comply with legal and other requirements; however, some organizations set objectives that are more strict.

Significant aspects, technological options, and financial, operational, and business requirements must be considered together. In some cases, meeting objectives may result in substantial cost savings and a potential return on investment. In other cases, little or no investment is required; for example, recycling programs usually require minimal investment. Meeting objectives that yield financial returns can also result in other benefits:

- improved environmental performance
- renewed commitment from top management
- higher employee morale.

To further illustrate this concept, consider a facility that uses high solvent paints for coating products. The significant aspects can be the generation of hazardous wastes and the emission of VOCs. The company might set the objective to reduce harmful air emissions. To achieve this objective, this facility might chose to install a high solid paint system, which will eliminate the use of high solvent paints, and reduce the generation of hazardous wastes and harmful air

emissions. Even though the investment for this new coating system is expensive, the organization may realize a return on investment within two years.

ISO 14001 does not require that each significant aspect have an objective. In fact, a few significant aspects may not be covered by an objective; however, these significant aspects should be reviewed and considered periodically.

The views of interested parties must also be considered when establishing objectives. ISO 14001 defines an "interested party" as an:

"...individual or group concerned with or affected by the environmental performance of an organization."

You may need to demonstrate or document that the views of interested parties were considered during this process.

5.2 Environmental Targets

Environmental targets are short-term goals that move toward achieving environmental objectives. ISO 14001 defines an "environmental target" as a:

"…detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives."

Targets must be specific and measurable, and they must be assigned a specific time-frame for completion. An example of an environmental target might be "a reduction of VOCs emissions by 30 (thirty) percent by July 1, 1999."

For each environmental objective, you will need to establish at least one environmental target. In some cases, several targets may be established to achieve an objective. For example, if the objective is to "reduce the amount of harmful air emissions," at least one target must be established to meet this objective. Even though it is not required by ISO 14001, you may want to look at each operation that has air emissions and evaluate the possibility of establishing a target for each operation that has air emissions.

5.3 Establishing Environmental Objectives and Targets

Objectives and targets can apply to an entire organization, can be site-specific, or can be specific to individual activities. The appropriate level(s) of management personnel should define the objectives and targets. In some cases, personnel who set objectives may not be the same as those who set targets.

Remember that the objectives are the overall environmental goals as reflected in the principles established in the environmental policy. The scope and number of the objectives and targets must be realistic and achievable. Otherwise, the success and continued commitment from top management and employees will diminish.

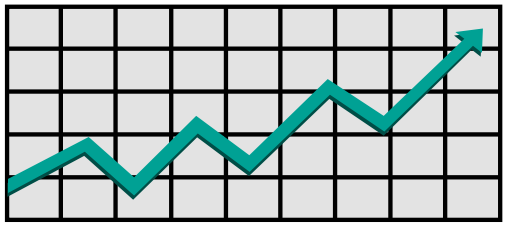
Consider the factors below, as you begin to formulate your environmental objectives:

- legal and other requirements
- significant aspects (aspects directly related to significant impacts)
- technological options
- financial, operational, and business requirements
- views of interested parties.

List your environmental objectives on **Form 12, ENVIRONMENTAL OBJECTIVES**, in Part 2. On **Form 13, OBJECTIVES AND TARGETS**, list each objective from Form 12, and identify the specific targets to meet each objective. The number of targets for each objective will vary.

Remember that the objectives are the long-term goals to address the significant aspects and to meet the commitments and the expected environmental performance established in your organization's policy.

5.4 Environmental Performance Indicators



ISO 14001 requires environmental targets to be "...quantified where practicable." The units used to quantify the targets are referred to as environmental performance indicators (EPIs).

The draft standard, ISO 14031, defines an EPI as an

"...expression that is used to provide information about environmental performance or the condition of the environment."

Following are some examples of EPIs:

- quantity of raw material or energy used
- quantity of emissions such as CO_2
- quantity of waste
- waste produced per quantity of finished product
- efficiency of material and energy use
- number of environmental incidents/accidents
- percent of waste recycled
- percent of recycled material used in packaging
- number of vehicle kilometers per unit of production
- specific pollutant quantities emitted (e.g., NO_x, SO_2, Pb, CFCs)
- investment in environmental protection
- number of regulatory violations or fines
- land area set aside for wildlife habitat.

Carefully consider the type of EPI you choose to use. Case in point: Suppose your organization establishes a target to reduce its non-hazardous waste by 40 (forty) percent by 2002, and the EPI you choose is "the total tonnage of waste produced each year (tons/year)." If your organization triples its production of units and reduces the amount of waste by 50 (fifty) percent per product unit, the EPI, "tons/year," does not show the reduction. In this case, the better EPI would have been "the weight amount of waste per product unit (pounds/unit)." In many cases, measuring against the production units proves to be more accurate.

The following is an example of an objective with a specific of a target and an environmental performance indicator:

Objective: reduce energy required in manufacturing processes
Target: achieve 15 percent reduction of energy by 2002
Indicator: quantity of electricity per production unit (kilowatt/unit)

On **Form 13, OBJECTIVES AND TARGETS**, list the EPI for each target. You may refer to Example 13 provided in Part 3. The list of objectives, targets, and EPIs on Form 13 must be maintained and should be reviewed at least annually.

5.5 Procedure for Objectives, Targets, and EPIs

Your organization must establish and maintain a procedure to determine and review objectives, targets, and EPIs. On **Form 14, PROCEDURE FOR OBJECTIVES AND TARGETS**, provide a written procedure on how your organization will establish and review its objectives, targets, and EPIs. You may refer to Example 14 in Part 3.

Summary Checklist

OBJECTIVES AND TARGETS

Step 1: Identify and list your organization's objectives on **Form 12, ENVIRONMENTAL OBJECTIVES**. In setting objectives, you must consider:

- legal and other requirements
- significant aspects (aspects directly related to significant impacts)
- technological options
- financial, operational and business requirements
- views of interested parties.

Step 2: List the specific environmental target(s) for each objective on **Form 13, OBJECTIVES AND TARGETS**.

Step 3: List the specific environmental performance indicators for each target on **Form 13, OBJECTIVES AND TARGETS**.

Step 4: On **Form 14, PROCEDURE FOR OBJECTIVES AND TARGETS**, describe your organization's procedure to establish and review the objectives and targets.

6.0 Environmental Management Program(s)

ISO 14001 Section 4.3.4, *Environmental Management Program(s)*, requires that organizations establish and maintain one or more environmental management programs for achieving their objectives. The environmental management program is a key element to the success of an EMS. Properly designed and implemented, environmental management programs should achieve the objectives and, consequently, improve your organization's environmental performance.

According to ISO 14001 Section 4.3.4 the environmental management program must:

1. address each environmental objective and target
2. designate the personnel responsible for achieving targets at each relevant function and level of the organization
3. provide an "action plan" describing how each environmental target will be achieved
4. establish a time-frame or a schedule for achieving each target.

An environmental management program is an action plan or a series of action plans to achieve an environmental objective.

6.1 Action Plans

An "action plan" is a detailed plan for the implementation of several tasks in order to achieve each target. An action plan should be established for each target. Action plans should include:

- specific actions in order of their priority
- cost parameters
- progress analysis
- necessary modifications.

Establishing an action plan for each target may require considerable effort on the part of the personnel at relevant levels within the organization. To ensure the progress of the action plan and a coordinated effort, a target leader should be selected for each target. The target leader will be responsible for ensuring a target is achieved within the specified time-frame.

Once the action plan is established, the EMS Coordinator or target leader must implement it. You may find that the following suggestions will help foster a cooperative effort in accomplishing the plan:

- Involve your employees early in establishing and carrying out the action plans
- Clearly communicate the expectations and responsibilities laid out in the action plans to those who need to know
- Build on the plans and programs you have now for environmental compliance, health and safety, and for quality management
- Keep it simple
- Focus on continual improvement of the environmental management programs over time

Complete **Form 15, ENVIRONMENTAL MANAGEMENT PROGRAMS**, for each objective. You may refer to Example 15 in Part 3.

6.2 New Activities, Products, or Services

The environmental management program should be revised regularly to reflect changes in your organization's objectives and targets. Track all new or modified operations, activities, and/or products in case the environmental management program needs to be amended to reflect these changes.

6.3 Procedure for Environmental Management Programs

Your organization must establish and maintain a procedure to determine and review environmental management programs and their associated action plans.

On **Form 16, PROCEDURE FOR ENVIRONMENTAL MANAGEMENT PROGRAMS**, provide a written procedure describing how your organization will establish and review its environmental management programs and the associated action plans. You may refer to Example 16 in Part 3.

Summary Checklist

ENVIRONMENTAL MANAGEMENT PROGRAMS

Step 1: Complete **Form 15, ENVIRONMENTAL MANAGEMENT PROGRAMS**, for each target. (Refer to Example 15 in Part 3.)

Step 2: Complete **Form 16, PROCEDURE FOR ENVIRON-MENTAL MANAGEMENT PROGRAMS**. Provide a written procedure on how your organization plans to establish and review its environmental management programs and the associated action plans.

7.0 Monitoring And Measurement

ISO 14001 Section 4.5.1, *Monitoring and Measurement*, requires that organizations establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of their operations and activities that can have a significant impact on the environment. ISO 14001 Section 4.5.1 also requires documented procedures to:

1. Monitor the calibration of EMS testing equipment and track records of this calibration process
2. Periodically evaluate the compliance with relevant environmental legislation and regulations.

Monitoring, measuring, and evaluating the significant impacts and environmental performance of objectives and targets are the first steps in gauging the effectiveness of the EMS.

7.1 Key Characteristics

The documented procedures required under this section must describe how an organization plans to monitor and measure key characteristics of its operations and activities that have a significant impact on the environment. Ultimately, the monitoring and measurement criteria will be used to record the following information:

1. performance
2. relevant operational controls
3. conformance of the organization's objectives and targets.

Monitoring and measuring EMS operations and activities will establish a mechanism to ensure that your organization is meeting its environmental policy, objectives, and targets.

In order to meet this requirement, your organization must perform six steps:

Step 1. Identify the activities that can have a significant impact
Step 2. Determine key characteristics of the activity to be monitored
Step 3. Select the best way to measure the key characteristics (For activities that have environmental targets, the environmental performance indicator for each target was established in Section 5.4.)
Step 4. Determine how to record information on the performance, relevant operational controls, and conformance with objectives and targets
Step 5. Determine the frequency with which to measure the key characteristics
Step 6. Establish a written procedure for this process.

On **Form 17, MONITORING AND MEASUREMENT OF SIGNIFICANT IMPACTS**, establish the monitoring and tracking criteria for each activity that can have a significant impact. Example 17 in Part 3 provides an illustration.

Review each action plan on Form 16. You should incorporate the monitoring and measurement information from Form 17 to the action plans on Form 16, if both forms cover the same activities.

After completing this process, develop and document the procedure on **Form 18, PROCEDURE FOR MONITORING SIGNIFICANT IMPACTS**. The documented procedure must enable personnel to monitor and measure the key characteristics of operations and activities that can have a significant impact on the environment.

7.2 Calibration of Monitoring Equipment

ISO 14001 Section 4.5.1 requires that organizations establish and maintain a calibration procedure for each piece of monitoring equipment used in step 7.1. The calibration procedures must also describe how the calibration records will be retained.

If your organization has obtained or is in the process of obtaining ISO 9000 registration, you may be able to leverage documented calibration procedures from the ISO 9000 process. If this is the case, review your ISO 9000 calibration procedures and make any necessary changes to meet the ISO 14001 requirements.

On **Form 19, PROCEDURE FOR CALIBRATION OF MONITORING EQUIPMENT**, establish and maintain a procedure for calibrating the monitoring equipment used in the Section 7.1. Be sure to include instructions for retaining the resultant records.

7.3 Compliance with Relevant Environmental Legislation and Regulations

ISO 14001 Section 4.5.1 also requires that organizations establish and maintain a documented procedure to periodically evaluate compliance with relevant environmental legislation and regulations. This requirement can be completed with internal and/or external audits, or with other monitoring methods.

Internal and external audits may have certain legal ramifications, particularly if any violations are discovered. You may want to seek legal counsel before completing this step.

ISO 14001 Section 4.5.1 does not require organizations to be in full compliance, nor does non-compliance prohibit an organization from being ISO 14001 registered. If an organization is not in compliance, a registrar will review all documentation to ensure that the organization is making the effort to comply with all environmental laws and regulations. Documentation to be reviewed will include the policy's commitment to comply with environmental legislation and regulations and EMS procedures.

On **Form 20, PROCEDURE FOR COMPLIANCE WITH RELEVANT ENVIRONMENTAL LEGISLATION AND REGULATIONS**, establish and maintain a documented procedure to

Summary Checklist

MONITORING AND MEASUREMENTS

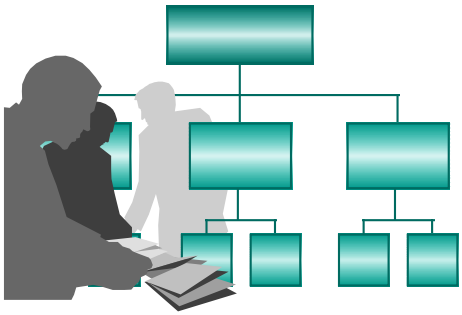
Step 1: On **Form 17, MONITORING AND MEASUREMENT OF SIGNIFICANT IMPACTS**, establish the monitoring and measurement criteria for each activity that can have a significant environmental impact.

Step 2: On **Form 18, PROCEDURE FOR MONITORING SIGNIFICANT IMPACTS**, prepare a procedure to monitor and measure the key characteristics of operations and activities that can have a significant impact on the environment.

Step 3: On **Form 19, PROCEDURE FOR CALIBRATION OF MONITORING EQUIPMENT**, develop a procedure for calibrating monitoring equipment used in Section 7.1. Include instructions for retaining calibration records.

Step 4: On **Form 20, PROCEDURE FOR COMPLIANCE WITH RELEVANT ENVIRONMENTAL LEGISLATION AND REGULATIONS**, establish a procedure to periodically evaluate compliance with relevant environmental legislation and regulations.

8.0 Structure And Responsibility



An effective EMS will clearly define and communicate its organizational structure and the roles and responsibilities of all personnel involved. ISO 14001 Section 4.4.1, *Structure and Responsibility*, provides requirements for the following three areas:

1. roles, responsibility, and authorities
2. appointed EMS management representative
3. availability of resources.

The following sub-sections address these three requirements.

8.1 Roles, Responsibility, and Authorities

ISO 14001 Section 4.4.1 states that

"…roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental management."

Each employee needs to know who is responsible for the various elements of the EMS to ensure a successful implementation. You should develop and make available to all employees a list of key personnel and their job descriptions, responsibilities, along with an organizational chart of key employees as they relate to the EMS. This should effectively define, document, and communicate the organizational structure of the EMS. Please note that this method is only a suggestion, and other ways of meeting the requirement for organizational structure may be used.

On **Form 21, ORGANIZATIONAL RESPONSIBILITIES**, list all personnel who have EMS responsibilities, either by job position or by employee name. Then provide the employee's EMS-related responsibilities. Based on this information, develop an organizational chart that illustrates the EMS responsibilities on **Form 22, ORGANIZATIONAL CHART AND STRUCTURE.**

8.2 Appointed Management Representative

ISO 14001 Section 4.4.1 requires top management to appoint a specific EMS Management Representative. As stated in Section 1.1, within small organizations, one person is likely to fulfill both the EMS Coordinator and the EMS Management Representative positions. A large company, however, would likely assign one person to each position. The EMS Coordinator, in this case, would handle the day-to-day operations of the EMS, while the EMS Management Representative would oversee the EMS and the EMS Coordinator's efforts.

ISO 14001 Section 4.4.1 requires the EMS Management Representative to have the authority and responsibility to:

1. Ensure the EMS is established, implemented, maintained in accordance with ISO 14001
2. Report the performance of the EMS to top management to ensure continual improvement.

The EMS Management Representative's role must be defined clearly, regardless of any other responsibilities this person may have. Forms 21 and 22 must include this information.

Keep in mind that the EMS Coordinator and/or EMS Representative serve to implement and manage the system; however, the ultimate responsibility for the EMS remains with top management.

8.3 Availability of Resources

As stated in Section 1.3, ISO 14001 Section 4.4.1 requires top management to provide the essential "resources" to implement, control, and manage the EMS. As defined by ISO 14001,

"…resources include human resources and specialized skills, technology and financial resources."

The list of employees and organization chart must reflect the designation of resources. For example, you may describe one of the responsibilities of a top management representative as, "allocate appropriate resources to the EMS Coordinator and/or department manager to implement and manage the EMS." To reinforce this commitment, your organization's budget should reflect these resources.

8.4 Procedure for Structure and Responsibility

ISO 14001 Section 4.4.1 does not specifically state that you must have a procedure to maintain the documented organizational structure and responsibilities. However, ISO 14001 Section 4.4.4, *Environmental Management System Documentation*, states that core elements must be described in the EMS. Therefore, an effective EMS should have a procedure in place to maintain the organizational structure and responsibilities.

On **Form 23, PROCEDURE FOR STRUCTURE AND RESPONSIBILITY**, prepare a procedure to maintain Forms 21 and 22.

Summary Checklist

STRUCTURE AND RESPONSIBILITY

Step 1: On **Form 21, ORGANIZATIONAL RESPONSIBILITIES**, list key personnel involved with the EMS and their job descriptions including the appropriate EMS-related responsibilities for each employee. Identify the appointed EMS Management Representative. Demonstrate the allocations of appropriate resources.

Step 2: Develop an organizational chart on **Form 22, ORGANIZATIONAL CHART AND STRUCTURE**.

Step 3: On **Form 23, PROCEDURE FOR STRUCTURE AND RESPONSIBILITY**, develop the procedure to maintain Form 21 and Form 22.

9.0 Training, Awareness And Competence

ISO 14001 Section 4.4.2, *Training*, requires that you provide environmental awareness training to all personnel and identify and provide specific training to those whose work may affect or create a significant environmental impact. Implementation of this requirement will ensure that employees receive the environmental and EMS training appropriate to the level of their involvement in the organization's activities, products, and services.

A knowledgeable work force can implement and maintain a successful EMS. Training raises awareness of the potential environmental impacts associated with work-related activities. Proper training also leads to compliance with certain legal requirements and can be used to reinforce the principles, goals and commitment to the EMS.

ISO 14001 Section 4.4.2 calls for two types of training:

1. Environmental awareness training for all employees, focused on the importance of Conformance with the EMS and the employee's personal work performance

2. Competency-based environmental training for employees whose work can cause actual or potential significant environmental impacts.

Employees whose work can cause an actual or a potential significant environmental impact must participate in both types of training, which may have some overlap and duplication.

The following sub-sections address the requirements for environmental awareness training, competency-based training, procedures for training, and documentation of training records.

9.1 Environmental Awareness Training

The requirements for general environmental awareness training apply to all employees including those whose work may cause significant environmental impacts. Awareness training is intended to provide an overview of the organization's environmental policy, objectives and targets, and overall EMS.

ISO 14001 Section 4.4.2 requires an organization must "...establish and maintain procedures to make its employees and members at each relevant function and level aware of:"

1. the importance of conformance with the policy and the EMS procedures and requirements
2. the actual and the potential significant environmental impacts of the activities, products, and/or services
3. the environmental benefits of improved personal performance
4. the employees' roles and responsibilities in achieving conformance with the policy and the EMS procedures and requirements
5. the employees' roles and responsibilities with the emergency preparedness and response requirements
6. the potential consequences of departure from specified operating procedures.

The environmental awareness training materials may also include additional elements that address:

- the organization's objectives and targets
- the employees' actions to minimize/eliminate environmental impacts and how each employee can contribute
- the importance of compliance with operational and regulatory requirements
- the overall improvement of the organization's environmental performance and the potential financial return
- the importance to "interested parties."

The environmental awareness training does not need to follow the format of long classroom sessions. Training techniques can include short training segments supplemented with videos and hands-on demonstrations that address key elements of the EMS. Other methods to promote and reinforce the environmental awareness training sessions include communication via electronic bulletin boards, posters, newsletters and informational meetings.

9.2 Competency-Based Training

ISO 14001 Section 4.4.2 states that an organization:

". . .shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training. . . . Personnel performing the tasks which can cause significant environmental impacts shall be competent on the basis of appropriate education, training and/or experience."

Competency-based training programs can vary greatly and be as unique as the facility and personnel working at a facility. The distinct operations of the facility and the level of education, training, and experience of the personnel determines the necessary elements of a competency-based training program.

To establish and maintain a competency-based training program that meets the ISO 14001 standard, the following steps must be taken:

- Identify competency-based training needs;
- Prepare the training materials;
- Conduct and evaluate the training.

9.2.1 Training Needs

Identification of employee training needs is typically the first step in developing a competency-based training program. In addition to existing workers, new hires, temporary workers and outside contractors must be included when identifying training needs. For ISO 14000 registration, your organization must demonstrate that the training needs for these employees were identified.

Identification efforts should focus on the employees whose work may cause significant environmental impacts. The significant impacts on **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**, should be reviewed in completing this step.

After developing a list of these employees, the EMS Coordinator and/or appropriate management personnel (direct manager, human resources manager, etc.) must establish the appropriate training program for each person based on the type of employee interaction with each significant impact. Even though some personnel may have the same job, the type or level of training may vary according to each person's past education, training, and experience.

A register containing information on specified levels of education, training, and experience must be established for each employee whose work is involved with any significant impact. The planned training program for each individual then should be listed. ISO 14001 Section 4.5.3 requires that all records for training be documented.

9.2.2 Training Materials

Your organization must determine the competency training level that the personnel need to receive at each relevant level and function. At a minimum, training materials must be designed to satisfy the legal and regulatory requirements pertaining to the significant impacts. Be aware that compliance with applicable regulatory training requirements may not necessarily ensure meeting EMS goals.

The training session should, at a minimum:

- Make the employee aware of the environmental aspects and impacts of his/her work particularly the possible significant impacts;
- Include environmental training required by applicable regulatory requirements and the company's EMS requirements;
- Include training necessary to obtain/retain required licenses or registrations;
- Emphasize responsibility for minimizing potential significant environmental impacts associated with the employee's job responsibilities;
- Identify potential consequences of departures from specified operating procedures;
- Address the environmental benefits of improved personal performance.

Training options may be as simple as on-the-job training, administered by senior/experienced members; formal training, including classroom instruction; training provided by external consultants. For some situations, commercially available training courses may be another alternative. Additional or customized training activities specific to individual needs, job descriptions, regulations and goals may be necessary pending the significant impacts and the existing skill level of each employee.

9.2.3 Conducting and Evaluating the Training

As the training is provided to specific employees, evaluate the competency of the training. Training evaluation efforts will serve to reinforce organizational commitment for continuous improvement and help to verify the goals of the EMS.

As each employee completes the appropriate training, record the completion of the training for each employee in the database that you create in Section 9.2.1. Training documentation typically consists of a training schedule/timetable, participants list, requirements for completion, and written certification. ISO 14001 Section 4.5.3 requires that all records for training be documented.

A sign-off sheet is another means to demonstrate that employees have completed training. A sign-off sheet would serve to acknowledge that the employee participated and completed the training and would document the date of completion.

Upon completion of internal training programs, participants should be required to demonstrate competency through written evaluation or hands-on demonstration. This evaluation process serves a dual purpose, testing both the student and the effectiveness of training materials and techniques.

9.2.4 Training Completion

ISO 14001 Section 4.4.2 requires

"…that all personnel whose work may create a significant impact upon the environment, have received appropriate training."

Two interpretations may result from the wording of this section. The first interpretation may be that the appropriate training must be completed for all personnel before a company can be registered. A second interpretation may be that a company may be registered if a training schedule for all personnel is in place and is being met.

This issue has not been resolved. However, you should be aware of it and discuss it with the ISO 14001 registrar.

9.3 Procedures for Training

ISO 14001 Section 4.4.2 requires that organizations establish and maintain procedures for environmental awareness training and competency-based training. Even though ISO 14001 Section 4.4.2 does not explicitly require a written procedure, a written procedure enables your organization to maximize the training results and the investment in training. For organizations obtaining ISO 14000 registration, a written procedure provides a means for the ISO 14000 auditor to review in better detail the environmental awareness training conducted.

On **Form 24, PROCEDURE FOR ENVIRONMENTAL AWARENESS TRAINING**, prepare the procedure(s) used to provide all personnel with environmental awareness training that makes employees aware of the six items listed in Section 9.1.

On **Form 25, PROCEDURE FOR COMPETENCY-BASED TRAINING**, explain the procedure(s) used to provide the appropriate training to the personnel whose work may affect or create a significant environmental impact.

Summary Checklist

TRAINING, AWARENESS AND COMPETENCE

Step 1: On **Form 24, PROCEDURE FOR ENVIRONMENTAL AWARENESS TRAINING**, explain the procedure(s) used to provide all personnel at your company with general environmental awareness training.

Step 2: On **Form 25, PROCEDURE FOR COMPETENCY-BASED TRAINING**, explain the procedure(s) used to provide the appropriate training to the personnel whose work may affect or create a significant environmental impact.

10.0 Communications

Communication and reporting within your organization are essential components for any effective management system. Poor communications will prove detrimental to any management system. Recognizing the importance of communication, ISO 14001 Section 4.4.3, *Communication*, requires that each organization establish and maintain procedures for internal and external communications "…with regard to its environmental aspects and environmental management system."

Documented communication procedure(s) enable organizations to:

- motivate the work force
- explain the environmental policy, significant aspects, objectives and targets, and environmental management programs
- provide an effective means for personnel to communicate and address issues relating to environmental aspects and the EMS
- ensure understanding of roles and expectations
- demonstrate management commitment.

The following sections address the ISO 14001 requirements for internal as well as external communications, both in terms of general information and information specifically related to your significant aspects.

10.1 Internal Communications

With regard to the environmental aspects and EMS, you must establish and maintain a procedure for internal communications among the various levels and functions of the organization. The procedure should take into account:

a. the issues pertaining to the EMS that need to be communicated
   - day-to-day operations
   - general awareness and educational
   - environmental regulatory reporting
   - information on achieving objectives and targets
   - environmental incidents
   - environmental aspects

b. communication media
   - verbal (i.e., meetings, brown bag lunches, etc.)
   - e-mail
   - formal memorandums
   - newsletters
   - posters or bulletin boards
   - suggestion box.

As you write the procedure, keep in mind that effective internal communications require mechanisms for information to flow top-down and bottom-up.

On **Form 26, PROCEDURE FOR INTERNAL COMMUNICATIONS**, provide your procedure for internal communications. Example 26 in Part 3 may provide some ideas.

10.2 External Communications

In accordance with ISO 14001 Section 4.4.3, an organization must establish and maintain a procedure to receive, document, and respond to "relevant communication" from external interested parties as it pertains to the organization's environmental aspects and EMS.

Some companies may already have an unofficial or official method to handle external communications. If this is the case, this method needs to be documented in the form of a procedure.

For small- and medium-sized organizations, the procedure may be simple: "The EMS Coordinator and/or EMS Management Representative will be responsible to document and respond to external communications." For larger organizations, the procedure may not be as simple. The Public Affairs office is probably the best first point of contact.

On **Form 27, PROCEDURE FOR EXTERNAL COMMUNICATIONS**, document the procedure for external communications. You may refer to Example 27 in Part 3.

10.3 External Communication of Significant Aspects

ISO 14001 Section 4.4.3 requires that companies:

1. Consider processes for external communications of its significant environmental aspects;
2. Record its decision on whether it will or will not proceed with external communications.

You must first determine whether or not your organization will initiate and establish communication regarding the organization's significant aspects. You may decide not to communicate such information. The organization's decision must be recorded to meet the requirement in this section.

In most instances, external interested parties (such as consumers, stockholders, neighboring communities, etc.) are the main driving forces for organizations to implement an EMS. The appropriate external communications may establish environmental credibility and satisfy stakeholder requests by presenting objective information on the organization's significant aspects, its EMS, or its environmental performance.

The various processes or means of external communication may include:

- annual reports or periodic newsletters of environmental performance sent to external stakeholders
- open house meetings for interested parties
- availability of regulatory submission of environmental data, or results of environmental audits
- environmental policy published in the media and industry association publications
- focus groups
- press releases.

The various means of such communication are endless. Such communication may benefit your organization in several ways, including improved employee morale and increased market exposure, either of which can lead to increased profits.

On **Form 28, EXTERNAL COMMUNICATIONS FOR SIGNIFICANT ASPECTS**, record your organization's decision regarding external communication of its significant aspects. If the decision is "yes", list the information and process or means by which you will convey such information. The information for this form may be in the form of a company memorandum or in documented meeting minutes.

Summary Checklist

COMMUNICATIONS

Step 1: On **Form 26, PROCEDURE FOR INTERNAL COMMUNICATIONS**, provide your procedure for internal communications.

Step 2: On **Form 27, PROCEDURE FOR EXTERNAL COMMUNICATIONS**, document the procedure for relevant external communications received that relate to your organization's aspects and its EMS.

Step 3: On **Form 28, EXTERNAL COMMUNICATIONS FOR SIGNIFICANT ASPECTS**, record the decision as to initiating external communication on its significant aspects. If applicable, describe the process or means to convey such information.

11.0 EMS Documentation

ISO 14001 Section 4.4.4, *EMS Documentation*, requires that organizations ". . . establish and maintain information, in paper or electronic form, to:

1. describe the core elements of the management system and their interaction;
2. provide direction to related documentation."

The following two sub-sections address these requirements.

11.1 Documentation of Core Elements

ISO 14001 Section 4.4.4 requires that you develop and maintain information that describes the "core elements" of the EMS. ISO 14001 does not define core elements; however, it does list 17 elements that many experts interpret to be the "core elements."

In order to effectively implement and communicate the EMS, these elements must be documented. Most of these elements require that you establish and maintain "procedures." The documentation of these procedures should establish a system that personnel can understand and effectively communicate within the organization and to external parties. For registration purposes, the ISO 14001 registrar will be able to review the documented procedures and understand what your company does and how your company does it.

ISO 14001 specifies which elements or parts of elements must be documented:

Required To Document	Provision
environmental policy	4.2
objectives and targets	4.3.3
roles, responsibility, and authorities	4.4.1
core elements of the EMS	4.4.4
operation control procedures	4.4.5
monitoring and measuring procedures	4.5.1
periodic evaluation of regulatory compliance	4.5.1
environmental, EMS, audit, & training records	4.5.3

If your organization follows actions that are not consistent with the documentation, the EMS will be ineffective. For registration, the ISO 14001 registrar will interview people and check records to ensure the documented procedures of the EMS are being followed.

11.1.1 Documentation Format

Several factors should be considered in determining the best format for documentation. For small organizations, documentation in a paper format can be kept up-to-date, controlled, and maintained in a central location effectively. However, for larger organizations, maintaining the documentation in a paper format at a central location, and ensuring that the documentation is up-to-date may be difficult. The feasibility of using an electronic format may also depend on your organization's computer network. Some organizations choose to maintain the documentation electronically.

11.1.2 Documentation Structure

The documentation for an EMS can become confusing if it is not properly structured. The recommended documentation system is a multi-level, tiered system. The pyramid in Figure 2 illustrates the recommended approach. The pyramid shape best illustrates the amount of information, degree of specificity, and number of pages contained in each section, gaining in size as you move from the top to the bottom of pyramid.

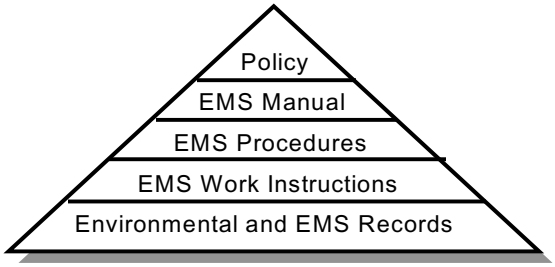


Figure 2. Sample of Tiered EMS Documentation

EMS documentation typically consists of five levels of documentation:

Level One - Environmental Policy. The environmental policy is a statement of the organization's intentions and principles in relation to its environmental performance.

Level Two - EMS Manual. This EMS manual will outline the goals and provide the road map of the EMS. The manual can serve as an overview of EMS for new employees, customers, and registrars. The manual should also address the 17 elements within the EMS. An example of an EMS Manual is provided after Example 38.

Level Three - EMS Procedures. These procedures define authority, responsibility and accountability for implementation and follow-through of the EMS.

Level Four - EMS Work Instructions. These instructions are specific, detailed work instructions describing methods for attaining environmental goals and, ultimately, for complying with environmental policy. These instructions are specific to individual operations and processes, and are directed at the worker level.

Level Five - Records. Records must be kept to monitor the performance of the EMS and to demonstrate to the ISO 14001 registrar that the EMS works. Several elements of the ISO 14001 requires that records be maintained.

This tiered system, properly prepared and maintained, will meet the requirements in ISO 14001 Section 4.4.4.

11.2 Roadmap of Documentation

ISO 14001 Section 4.4.4 requires that you "...provide direction to related documentation." For the EMS to be effective, the user must be able to find and access the information needed. A flowchart is one of the simplest ways to establish a roadmap to meet this requirement.

On **Form 29, FLOWCHART OF EMS**, prepare a flowchart that illustrates the structure of your organization's EMS documentation system.

Summary Checklist

EMS DOCUMENTATION

Step 1: Prepare an EMS Manual to link the policy with the procedures. An example of an EMS Manual is provided after Example 38 in Part 3.

Step 2: On **Form 29, FLOWCHART OF EMS**, prepare a flowchart that illustrates your organization's EMS documentation.

12.0 Document Control

ISO 14001 Section 4.4.5, *Document Control*, requires that organizations establish and maintain procedures to control all documents required by ISO 14001. The purpose of these document control procedures is to ensure that organizations create and maintain documents sufficient to implementing an EMS.

The procedure must ensure that:

- EMS documents can be located
- EMS documents are legible, dated (with dates of revisions) and readily identifiable
- EMS documents are maintained in an orderly manner and retained for a specified period
- EMS documents are periodically reviewed, revised as necessary, and approved for adequacy by authorized personnel
- The current versions of relevant documents are available at all locations where they are necessary
- Obsolete documents are promptly removed from all distribution points
- Any obsolete documents retained for legal and/or knowledge preservation purposes must be identified as such.

ISO 14001 Section 4.3.5 also requires that organizations establish procedures and designate responsibilities and authority regarding the creation and modification of EMS documents.

12.1 Master Index

To ensure everyone is using the correct version of a document, a master index of documents is recommended. The master index lists:

- all the EMS documents (including obsolete documents retained for legal and/or knowledge preservation purposes)
- location of each EMS document
- history of revisions
- date of the next review.

All the EMS documents and the master index should be centrally located, if possible. For small organizations, one copy of the EMS documents centrally located may be sufficient. In these cases, a sign-out system for documents must be used to track documents.

If multiple copies of certain EMS documents are available and placed at various locations, a distribution list should be prepared. The distribution list should be incorporated or attached to the master index. In addition to tracking where documents can be found, this list will provide a means to replace obsolete versions of documents with revised versions.

12.2 Document Format

The procedures should require documents to have specific headers or outlines to make the EMS documents more legible and readily identifiable. Examples of certain elements to include in the headers are:

- document tier level
- document name
- document number
- copy number
- revision number
- approval (signature)
- issue date
- revision date
- effective date
- cross references.

In addition, you may choose to develop a specific format or outline for documents at each tier level.

12.3 Paper or Electronic

The ISO 14001 documents may be stored and maintained in paper or electronic format. The decision regarding which format to use should be made early in the process. In most cases, an electronic format allows for better control and management of documents. This should be considered in the decision making process.

On **Form 30, PROCEDURE FOR DOCUMENT CONTROL**, develop a procedure to establish and maintain document control of the EMS documentation.

Summary Checklist

DOCUMENT CONTROL

Step 1: On **Form 30, PROCEDURE FOR DOCUMENT CONTROL**, develop procedure(s) to establish and maintain document control of the EMS documentation.

13.0 Operational Controls

Operational controls are the practices and procedures designed specifically to ensure you meet your organization's policy, goals and objectives. Operational controls and procedures should:

- Be easy to understand and use
- List personnel who should receive them
- Identify the training needed for the appropriate personnel.

To ensure that your organization's environmental policy, objectives, and targets are met, ISO 14001 Section 4.4.6, *Operational Control*, requires that organizations establish and maintain documented procedures to provide operational controls for those activities associated with identified significant environmental aspects.

13.1 Activities Associated with Significant Aspects

The first step in this process is to identify activities that may have actual or potential significant aspects. **Form 6, ENVIRONMENTAL ASPECTS AND IMPACTS**, has already listed the activities with actual or potential significant aspects significant aspects.

In addition to the activities most likely identified in the routine production process as described in the last paragraph, other activities may contribute to significant impacts. As listed in ISO 14004, such activities may include:

- research and development design and engineering
- purchasing
- contracting
- handling and storage or raw materials
- production and maintenance processes
- lab analysis
- storage of products
- transportation
- marketing and advertising
- customer service
- acquisition, construction, or modification of property and facilities.

To identify such activities from which significant impacts may arise, you may want to work with the managers associated with each of these activities.

13.2 Procedure for Operational Controls

Procedure(s) for operational control must now be developed for the activities that may contribute to actual or potential significant aspects. These procedures must:

1. Cover situations where their absence could lead to deviations from the environmental policy and the objectives and targets
2. Stipulate operating criteria in the procedures
3. Identify significant environmental aspects of goods and services used by the organization, and communicate relevant procedures and requirements to suppliers and contractors.

For some activities, procedures may already be in place that you can build on to meet the requirements of this step. The procedures should cover normal operations, abnormal operations, and emergencies.

On **Form 31, PROCEDURE FOR OPERATIONAL CONTROLS**, write a procedure to develop and maintain operational controls for all the activities that contribute or can contribute to significant aspects.

Example 31 in Part 3 illustrates one method that requires EMS team personnel and the personnel responsible for each activity to develop work instructions for each appropriate activity. The work instructions must include and meet the three requirements listed above.

13.3 Suppliers and Contractors of Goods and Services

Suppliers and contractors must understand your organization's requirements so that they do not unwittingly cause your organization to compromise your EMS. The materials, parts, products, and goods received from suppliers may create some environmental aspects. Likewise, the activities of your contractors can affect your EMS.

To conform with this provision, your organization must review the supplies and services it receives. The next step is to identify the significant aspects of these items.

ISO 14001 Section 4.4.6 requires that you communicate "...relevant procedures and requirements to suppliers and contractors." This is a rather delicate section of ISO 14001, as there is no intent in the standard to impose the organization's EMS on contractors or suppliers.

Although ISO 14001 does not require your suppliers to do anything, the standard does not prohibit a company from going beyond what is required. For instance, a company may list "minimize disposal of non-hazardous waste" as an environmental objective. If a supplier of products uses excessive packaging, you may require that the supplier redesign its packaging to minimize your waste disposal.

On Form 32, **OPERATIONAL CONTROL PROCEDURES FOR GOODS AND SERVICES**, list the materials, parts, products, goods, and services that your organization receives and that are related to these identifiable significant environmental aspects. Communicate relevant procedures and requirements to every supplier or contractor to minimize or eliminate significant aspects.

Summary Checklist

OPERATIONAL CONTROLS

Step 1: On Form 31, **PROCEDURE FOR OPERATIONAL CONTROLS**, write your procedure(s) for operational controls that meet the three requirements under Sections 13.0 and 13.2.

Step 2: List the materials, parts, products, goods, and services that your organization receives and that are associated with a significant aspect on Form 33, **OPERATIONAL CONTROL PROCEDURES FOR GOODS AND SERVICES**. For each item, identify the significant aspect.

Step 3: Communicate your EMS and specific procedures to the appropriate contractor or supplier. Provide any requirements that you may want the contractor or supplier to adopt. List a brief description on Form 33.

14.0 Emergency Preparedness And Response Plans

ISO 14001 Section 4.4.7, *Emergency Preparedness and Response*, requires that organizations establish and maintain procedure(s) to:

1. Identify potential accidents and emergencies
2. Respond to accidents and emergencies
3. Prevent and mitigate the environmental impacts that may be associated with accidents and emergencies.

Section 4.4.7 also requires that organizations review and revise, when necessary, their emergency preparedness and response procedure(s), especially after an accident or emergency situation. Organizations must also periodically test such procedures where practicable.

Most organizations have already developed and implemented emergency response plans to comply with various federal and state regulations that require such plans. Examples of federal regulations that require such plans include:

- Resource Conservation and Recovery Act (RCRA) Contingency Plans
- Spill Prevention, Control, and Countermeasures (SPCC) Plans
- Facility Oil Response Plans under the Oil Pollution Prevention Act of 1990
- Employee Emergency and Fire Prevention Plans under Occupational Safety and Health Administration (OSHA).

Some states have regulations that require similar emergency response plans. For instance, the state of Pennsylvania requires certain facilities to develop and implement a Preparedness, Prevention, and Contingency (PPC) Plan in addition to federal requirements.

The ISO 14001 requirements are similar to the requirements of most regulatory emergency plans. Whether your facility has emergency response plans or not, you should review the following sections to ensure you meet the ISO 14001 emergency response requirements.

14.1 Identification of Potential Accidents and Emergencies

ISO 14001 requires that emergency response procedure(s) describe how you plan to identify potential environmental accidents and emergency situations. Potential environmental accidents and emergency situations should include:

- fire
- accidental emissions to the atmosphere
- accidental discharges to water
- accidental discharges to land
- specific environmental, ecosystem, and health and safety effects from such accidental releases and emergency situations.

Identifying potential environmental accidents and emergency situations requires intimate knowledge of operations including, processes, materials used, and operating practices. When determining potential environmental accidents and emergency situations, consult the following sources:

- EH & S engineers
- Process engineers
- Equipment manufacturers
- Operators
- Maintenance personnel
- Aspect & Impact evaluations
- Job Safety Analyses (JSA's)
- Accident Reports/Records (OSHA 200 form)
- Material Safety Data Sheets (MSDSs).

In addition to consulting the above resources, it is useful to perform a walk-through inspection to identify potential environmental accidents and emergency situations Walk-through inspections are most effective when performed during typical operating conditions using observational and non-threatening interview and communication techniques.

14.2 Emergency Response Plans

Emergency response plans are the result of prior planning, testing, and the coordination of internal and external resources (e.g., police and fire departments, HAZMAT, medical centers). Emergency response plans provide written instructions and information to use during accidents and emergency situations. Such plans can also provide information to prevent or mitigate environmental impacts.

ISO 14004 recommends that emergency response plans should include:

- emergency organization and responsibilities
- a list of key personnel
- provisions for safe evacuation, assembly and accounting of personnel details of emergency services (e.g., fire department, ambulance services, spill clean-up services, etc.)
- internal and external communication plans
- actions taken in the event of different types of emergencies
- information on hazardous materials (e.g., MSDSs) that include each materials potential impact on the environment and measures to be taken in the event of accidental release
- training plans
- procedures to test the plan's effectiveness.

Emergency response plans, including facility layouts and MSDSs, should be filed with the emergency responding agencies for emergency situations. Emergency responders must be familiar with facility layouts and potential hazards, and must be adequately trained to prevent and mitigate a variety of human and environmental impacts.

14.3 Emergency Response Plans Review and Revision

Your organization must review and revise, when necessary, its emergency preparedness and response procedures, especially after an accident or emergency situation. You must also periodically test such procedures where practicable. Otherwise, plans may never be determined to be adequate or inadequate until after an accident that may have been avoidable with proper testing procedures.

On **Form 33, PROCEDURE FOR EMERGENCY PREPAREDNESS AND RESPONSE**, develop a procedure to respond to emergency situations.

Summary Checklist

EMERGENCY PREPAREDNESS AND RESPONSE PLANS

Step 1: On Form 33, **PROCEDURE FOR EMERGENCY PREPAREDNESS AND RESPONSE**, establish and maintain a procedure that will:

1. identify potential accidents and emergency situations
2. respond to accidents and emergency situations
3. prevent and mitigate the environmental impacts that may be associated with them
4. review and revise, when necessary, its emergency preparedness and response procedures, especially after an occurrence of accident or emergency situation
5. periodically test emergency response procedures where practicable.

15.0 Nonconformance And Corrective And Preventive Action

Your organization has and will continue to work very hard on your EMS. However, your EMS will not be perfect, especially in the initial stages of implementation and maintenance. As your organization changes, the EMS will need to change. In order to deal with these issues, ISO Section 4.5.2*, Nonconformance And Corrective And Preventive Action,* requires that organizations establish and maintain procedures that:

- Define responsibility and authority for handling and investigating nonconformance
- Take action to mitigate any impacts caused by nonconformance
- Initiate and complete the appropriate corrective and preventive action.

ISO Section 4.5.2 also states that

"…any corrective or preventive action taken to eliminate the causes of actual and potential non-conformances must be appropriate to the magnitude of problems and commensurate with the environmental impact encountered."

If any changes in the documented procedures result from any corrective and preventive action, you must implement and record these changes.

15.1 Nonconformance

Nonconformance refers to any issues that do not meet or comply with the requirements established in the EMS or the ISO 14001 standard. Procedures developed under ISO Section 4.5.2 will provide the mechanism to handle non-conformances and to ensure steps be taken to prevent a recurrence.

The procedures should include the following key steps:

1. Identify the problem
2. Determine the cause
3. Establish the solution
4. Document the solution
5. Implement the solution
6. Record the documentation and implementation of the solution
7. Communicate the solution.

The sources that might identify a problem vary in nature. Source may include audits, accidents, review of core elements, monitoring, employee suggestions, or a change in the company operations or activities.

On **Form 34, PROCEDURE FOR NONCONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION**, write your organization's procedure(s) to address and to correct non-conformances and to prevent future recurrences.

Summary Checklist

NONCONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION

Step 1: On Form 34, **PROCEDURE FOR NON-CONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION**, write your organization's procedure(s) to address and to correct non-conformances and to prevent future recurrences.

16.0 RECORDS

ISO Section 4.5.3*, Records,* requires that organizations establish and maintain procedures for the identification, maintenance and disposition of EMS records and all records applicable to federal, state, and local regulatory requirements.

This section specifies that training records and the results of audits be included with EMS records. ISO 14004 and Annex A of ISO 14001 suggest the following records be also included:

- legislative and regulatory requirements
- compliance records
- permits
- environmental aspects and their associated impacts
- environmental regulatory training records
- inspection, calibration and maintenance activity
- inspection, monitoring, maintenance records
- calibration records
- information on emergency preparedness and response
- details of non-conformance, incidents, complaints and follow-up action
- product identification (composition and property data)
- supplier and contractor information.

Records demonstrate the ongoing operation of your EMS and its conformance to the ISO 14001 standard. Records also allow you to track your progress in meeting your organization's objectives, targets and overall environmental performance.

For some organizations, maintaining these records may be viewed as bureaucratic. However, in order for any management system to operate consistently and efficiently, records must be maintained.

To ensure the record system is functional and efficient, ISO 14001 Section 4.5.3 also states that the environmental records must:

- be legible, identifiable and traceable to the activity, product or service involved
- be stored and maintained so that they are readily retrievable and protected against damage, deterioration or loss
- have established and recorded retention times.

On **Form 35, PROCEDURE FOR RECORDS**, write your organization's procedure(s) to identify, maintain, and store the EMS and environmental records.

Summary Checklist

RECORDS

Step 1: On Form 35, **PROCEDURE FOR RECORDS**, write your organization's procedure(s) to identify, maintain, and store the EMS and environmental records.

17.0 Environmental Management System Audits

ISO 14001 Section 4.5.4, *Environmental Management System Audits,* requires that organizations establish and maintain programs and procedures to conduct periodic EMS audits. The EMS audits must determine if the EMS:

- is properly implemented and maintained
- conforms to the planned arrangements
- meets the requirements of the ISO 14001 standard.

Please remember, this required audit is an audit of the EMS, not a regulatory compliance audit or an environmental performance audit.

ISO 14001 Section 4.5.4 requires the programs and procedures to define:

- audit scope
- audit frequency
- audit methodologies
- responsibilities and requirements for conducting audit
- communication of the audit results.

17.1 Selection of Auditors

Annex A of ISO 14001 also suggests that programs and procedures should cover auditor competence. Competence level may be measured by training, participation in previous audits, and experience in conducting audits.

Auditors may be external or internal personnel; however, they should be in a position to be impartial and objective. If internal personnel are selected to perform an audit, a mechanism needs to be established to ensure objectivity. For instance, a representative from another department may be selected to do the audit.

To properly conduct an EMS audit, an audit team should be established. Audits are demanding and require various forms of expertise. The size of the audit team will vary pending the size of the organization, size and type of operations, and the scope of the audit.

17.2 Frequency of Audits

The frequency of the audits or the schedule of audits must be included in the procedures. The frequency should be guided by the nature of the organization's operations, its potential environmental risks, its environmental aspects and potential impacts. Also, the maturity of the EMS and the results of previous audits should be considered in determining frequency.

You should not wait until the system is fully documented to conduct the first audit. In fact, the audit team can conduct audits as the system is being implemented. The audit information and results must be presented to management for its review and, if applicable, to establish appropriate corrective action. Documented results of audits allow for monitoring the progress of corrective actions.

17.3 Documentation of the EMS Audit

Once the audit is completed, the results of the EMS audit must be reported to management. In fact, a formal written report of the EMS audit should be presented to management following each audit.

Guidelines for auditing an EMS are detailed in ISO 14011. This document contains information for internal audits of the EMS system, but the information is useful for registration to the standard as well.

On **Form 36, PROCEDURE FOR EMS AUDITS**, write your organization's procedure to conduct periodic EMS audits and to document the results of the EMS audits.

Summary Checklist

ENVIRONMENTAL MANAGEMENT SYSTEM AUDITS

Step 1: On Form 36, **PROCEDURE FOR EMS AUDITS**, write your organization's procedure to conduct periodic EMS audits and to document the results of the EMS audits.

18.0 Management Review

ISO Section 4.6, *Management Review,* requires that top management periodically review the EMS to ensure its continuing suitability, adequacy, and effectiveness. The frequency or intervals of the top management review must be defined in the EMS.

The management review must address the possible need for changes to policy, objectives, targets, and other elements of the EMS. The management review process must ensure that the necessary information is collected ahead of time to allow management to effectively carry out this evaluation. Information that must be reviewed includes:

- minutes from previous management reviews
- the environmental policy, objectives and targets
- results of EMS audits
- the extent to which the overall environmental objectives and the numeric targets have been met
- suitability and effectiveness of the EMS based possible changing circumstances that may include:
- new or proposed legislation or regulations
- changing expectations and requirements of relevant interested parties
- new or modified activities, products, or services
- advances in technology and science
- changing market preferences of buyers

All management reviews must be documented. Observations, conclusions, and recommendations for further necessary action from the review must be recorded. If any corrective action must be taken, top management should follow up to ensure that the action was effectively implemented.

The purpose and final outcome of the management review should be continual improvement of the EMS. As your organization's EMS increases in its effectiveness and efficiency, your environmental performance will likewise increase.

On **Form 37, PROCEDURE FOR MANAGEMENT REVIEW**, write your organization's procedure to prepare, conduct, and document top management reviews.

Summary Checklist

MANAGEMENT REVIEW

Step 1: On Form 37, **PROCEDURE FOR MANAGEMENT REVIEW**, write your organization's procedure to prepare, conduct, and document top management reviews.